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The EXTENSION ENTOMOLOGIST

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U. S. Department of Agriculture

A national conference, December 19-20, 1941, to formulate plans for war garden effort, called by Secretary Wickard and Paul V. McNutt, Director of Defense Health and Welfare Service, was attended by 250 representatives of garden associations and clubs; garden, daily, and farm press and radio; seed, horticultural, and allied trade associations; and Government agencies. Principal speakers were Secretary Wickard, Administrator McNutt, Governor Prentice Cooper of Tennessee, Richardson Wright (editor of House and Garden), and Mrs. Ernest K. Lindley, representing Office of Civilian Defense.

Secretary Wickard said: "We need to proceed carefully. I do not think the Nation will benefit at present from a widespread, all-out campaign intended to put a vegetable garden in every city backyard or on every vacant lot. The national supply of fertilizer is almost sure to be scarce, because many of the chemicals which go into fertilizers also are needed to make munitions. The same is true of some of the commonly used insecticides and fungicides....It is ill advised to plant a garden on poor soil such as will be found in many city backyards, where subsoil from the cellar hole has become the topsoil, or where fills have been made with rocks, brickbats, and cinders....Several months ago the free peoples of the world received a new inspiration from the symbol of V for Victory. I think we might add a couple more V's in our planning for a national garden program. Let's make it the three V's--Vegetables for Vitality for Victory."

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE AND
EXTENSION SERVICE, COOPERATING

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UNITED STATES DEPARTMENT OF AGRICULTURE

Washington, D. C.

THE EXTENSION ENTOMOLOGIST

Issued by the Extension Service and the Bureau of Entomology and Plant Quarantine cooperating with other Federal and State agencies in the furtherance of extension work in entomology

M. P. Jones
Senior Extension Entomologist

ANNOUNCEMENT

March 26-27, 1942. North Central States Entomologists. Urbana, Ill.

PERSONNEL

The U. S. Department of Agriculture has announced new assignments for two officers of the Bureau of Entomology and Plant Quarantine. Sievert A. Rohwer, an assistant chief of the bureau, has been placed in charge of regulatory work, and William Lee Popham has been appointed an assistant chief in charge of control operations. Dr. P. N. Annand is chief of the Bureau.

Mr. Rohwer was born in Telluride, Colo., on December 22, 1888. He was educated in Colorado and came to the Department in 1909 as a taxonomist. In 1923 he was placed in charge of the new Division of Insect Identification of the Bureau of Entomology, and in 1927 was assigned to general administrative duties. When Plant Quarantine and Control Administration was created in 1928 he was appointed assistant chief of that Bureau. In 1933 Mr. Rohwer was transferred to the Bureau of Entomology as assistant chief and continued as such when the Bureau of Entomology and Plant Quarantine was created in 1934.

Mr. Popham was born in Corvallis, Mont., on February 26, 1901. He received a B. S. degree in agriculture from Montana State College in 1923, and did 2 years' postgraduate work in botany and plant pathology at the same school. His first position was held with the Montana State Horticultural Board, and he entered the Department of Agriculture's Bureau of Plant Industry in September 1924 as a State leader in black-stem rust control. In 1928 he became regional leader for Montana and Wyoming, and in 1930 a field supervisor for 13 North Central States. He came to Washington as assistant chief of the Division of Barberry Eradication in 1931 and, when this work was taken over by consolidation with the Bureau of Entomology and Plant Quarantine in 1934, he was placed in charge of barberry-eradication work.

Pennsylvania.--Dr. John M. Deal was appointed October 15, 1941, to the Agricultural Extension Service of Pennsylvania State College, as assistant extension entomologist and assistant professor of entomology extension. Dr. Deal received the B. A. degree in 1930 and M. A. in 1931 from the University of Kansas. From 1931 to 1934 he was a graduate student at Cornell University, and in 1939 received his Ph. D. degree at London University, London, England. Dr. Deal has had a rather wide experience in entomological field work: In 1929, on European corn borer, U. S. Department of Agriculture, Toledo, Ohio; in 1930 as assistant to the Kansas State entomologist, Lawrence, Kans.; in 1931 at the U. S. Department of Agriculture Gypsy Moth Research Laboratory, Melrose Highlands, Mass.; in 1932 and 1933 at the New York Agricultural Experiment Station, Long Island sub-station, Riverhead, N. Y.; during 1934 he was employed as temporary assistant in entomology extension, Pennsylvania State College, State College, Pa. From 1934 to 1936, Dr. Deal held the position of chief entomologist, United Fruit Co., Central and South America, Almirante, Panama; from 1936 to 1940 he was Research Entomologist, Rothamsted Experiment Station, Harpenden, England. He returned home late in 1940 by way of San Francisco, Calif., visiting agricultural experiment stations in foreign countries and in the United States en route.

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REPORT, SECTION OF EXTENSION, A.A.E.E., 1941

The thirteenth annual meeting of the Section of Extension, A.A.E.E., was presided over by Sam C. McCampbell, Colorado, chairman, and G. F. MacLeod, California, secretary. Because of the war, the program of this section, as announced, was changed and made general to permit discussions of interest to all entomologists, and two very timely topics were discussed. The subject, The Entomologist's Place in National Defense, was opened by remarks by B. A. Porter, senior entomologist, Division of Fruit Insect Investigations, Bureau of Entomology and Plant Quarantine. Discussion of the second topic, The Insecticide Situation in Relation to National Defense, was opened by A. J. Flebut of the California Spray Chemical Company.

The 117 people present discussed these topics very freely and many points were brought out on ways in which entomology will be affected by National Defense and on the present and future supply of insecticides. After about 2 hours of discussion, the section adjourned and elected officers to serve for the ensuing year as follows: Chairman; J. O. Pepper, extension entomologist, Pennsylvania; secretary, C. Graham, assistant extension entomologist, Maryland.

EXTENSION SPECIALISTS IN ENTOMOLOGY

Alabama	W. A. Ruffin	Alabama Polytechnic Institute, Auburn
Arizona	H. G. Johnston	Box 751, Phoenix
Colorado	Sam C. McCampbell	College of Agriculture, Fort Collins
Delaware	L. A. Stearns	University of Delaware, Newark
	J. M. Amos	University of Delaware, Newark
Idaho	W. E. Shull	University of Idaho, Moscow
	H. C. Manis	University of Idaho, Moscow

Illinois	H. B. Petty	Natural Resources Building, Urbana
Indiana	G. E. Lehker	Purdue University, La Fayette
Iowa	Harold Gunderson	Iowa State College of Agriculture, Ames
	G. C. Decker	Iowa State College of Agriculture, Ames
	Lewis Graham	Iowa State College of Agriculture, Ames
Kansas	E. G. Kelly	Kansas State College of Agriculture, Manhattan
Maryland	E. N. Cory	University of Maryland, College Park
	C. Graham	University of Maryland, College Park
Michigan	C. B. Dibble	Michigan State College, East Lansing
Minnesota	H. L. Parten	Department of Agriculture, University of Minnesota, St. Paul
Missouri	G. D. Jones	College of Agriculture, University of Missouri, Columbia
Nebraska	D. B. Whelan	College of Agriculture, Lincoln
	O. S. Bare	College of Agriculture, Lincoln
New York	R. W. Leiby	New York State College of Agriculture, Ithaca
	W. E. Blauvelt	New York State College of Agriculture, Ithaca
	J. A. Evans	New York State College of Agriculture, Ithaca
North Carolina	*J. O. Rowell	State College Station, Raleigh
North Dakota	F. Gray Butcher	North Dakota Agricultural College, Fargo
Ohio	T. H. Parks	Ohio State University, Columbus
Oklahoma	C. F. Stiles	Oklahoma Agricultural and Mechanical College, Stillwater
	J. M. Maxwell	Oklahoma Agricultural and Mechanical College, Stillwater
Pennsylvania	H. E. Hodgkiss	Pennsylvania State College, State College
	L. E. Dills	Pennsylvania State College, State College
	J. O. Pepper	Pennsylvania State College, State College
	John Deal	Pennsylvania State College, State College
South Carolina	W. C. Nettles	Clemson Agricultural College of South Carolina, Clemson
South Dakota	G. I. Gilbertson	South Dakota State College of Agriculture, Brookings
Texas	Cameron Siddall	Agricultural and Mechanical College of Texas, College Station
Washington	L. G. Smith	State College of Washington, Pullman

*Called to military service effective March 26, 1942.

POST-WAR AGRICULTURAL PLANNING

Secretary Wickard, speaking on "The Farm Front" at the 37th annual convention of the Farmers' Educational and Cooperative Union, at Topeka, Kans., Nov. 18, 1941, summed up the Department's post-war planning program as follows:

1. A public works program to conserve and build up the Nation's national resources -- including forestry, soil conservation, flood control, water facilities, range improvement, and similar tasks.

2. A program to provide services and facilities needed by farmers, such as rural housing, medical care, rural electrification, education, libraries, and marketing facilities.
3. A study of agricultural-industrial relation in the post-defense period. This would include analysis of such problems as industrial decentralization and distribution of farm products; such programs as the stamp plan and school-lunch program, keeping America's share of foreign markets after the war, and means of maintaining industrial output and employment at a high level.

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A Department Committee on Post-defense Planning and nine regional committees were named by Secretary Wickard to draft a broad agricultural plan. The Washington committee is headed by Roy I. Kimmel of the Bureau of Agricultural Economics, and includes representatives of the major Department agencies. These committees will work with the State agricultural colleges and State and county agricultural planning committees, which include 122,000 farm men and women in nearly 1,900 counties.

EXTENSION TEACHING

Our teaching must be simplified to only partially percolate from the upper age levels into the lower levels or groups. The teaching plan, the tools with which we do the teaching, must be simplified. We should keep in mind that in a democracy everybody is entitled to something, even if it is a mere service. I am not inclined to believe that we should seriously consider the matter of making everyone a thinker. Let us keep in mind that we all do a great many things from suggestion, things that are mere skills, without so much of thinking. We are farther ahead in the game as a whole if we teach even better practices as skills without even knowing why, than we are to let people go on and on without any attempt to change a poor practice into a good one, or to substitute a better one for a poor one.

Idealism is well to keep in mind, but it is well also to step down several rounds on the mental ladder and reach a hand to those who are just coming up. Our methods should be determined by the mental age groups to be dealt with. We need not be a diagnostician of individuals. Let us keep in mind that the psychologists of today have their facts about as well in hand as the medical man, the lawyer, the economist, the sociologist, or any other subject-matter group. A good principle to keep in mind is to teach just so much of the truth as can be accepted and await another day to teach the fuller truth.

-- A. B. Graham.

ABSTRACTS OF ANNUAL REPORTS OF EXTENSION ENTOMOLOGISTS - 1940

COOPERATING AGENCIES

Nebraska. The extension entomologists cooperated fully with the various State and Federal agencies and received full cooperation in return. Thus the grasshopper and chinch-bug-control campaigns were carried on in cooperation with the U. S. Bureau of Entomology and Plant Quarantine. Other

agencies cooperating in this work were the Soil Conservation Service, Agricultural Adjustment Administration, the U. S. Forest Service, the U. S. Indian Service, and the Works Progress Administration.

Rodent control was carried on in cooperation with the U. S. Fish and Wildlife Service and the U. S. Forest Service. The Farm Security Administration, the Nebraska Department of Vocational Education, as well as various farms and business organizations cooperated fully.

BOY SCOUTS AID IN EARWIG CONTROL

Idaho. In Moscow, Troop 143 Boy Scouts of America were organized by the Extension Entomologist to disseminate information on earwig control. They distributed handbills to the residents of the city and offered to demonstrate earwig control. These boys were trained in earwig control by the Extension Entomologist.

NATURE GUIDE TRAINING SCHOOL - W.P.A. RECREATIONAL DEPARTMENT

Michigan. For the second time, a class on insects was conducted at the W.P.A. Recreational Department Nature Guides Training School. This school is intended to train people to act as guides for nature study activities in the State parks and similar places.

Owing to bad weather, the class was conducted this year on a lecture basis, without a field trip. The monotony of the lecture work was relieved by the use of film strips and mounted insects. Copies of the 4-H Insect Manual were supplied for later reference.

A few visits were made to some of the class after they were at work. Members visited were intensely interested in the insect life they were encountering and had many questions on life history, habits, and identification.

DEMONSTRATION ON MAKING POPULATION COUNTS

Arizona. A field demonstration was given of the method of making population counts of cotton insects to determine if control is necessary. Ninety-five persons interested in cotton-insect control attended. These meetings were arranged and supervised by J. H. O'Dell, county agricultural agent, Maricopa County. Also, numerous field calls were made to assist growers in checking on their population counts.

ULTIMATE OBJECTIVES

Iowa. Through method and result demonstrations, discussion meetings, and 4-H Club training, we hope to call the farmers' attention to the importance of timely and adequate insect control. The ideal time to apply control measures is during the incipient stage when there are few, if any, destructive outbreaks of insects, and the expenditure of both time and money for control can be greatly reduced.

COLORED MOVIES AT 4-H CLUBS

Iowa. During the summer, 8-mm. color movies were made at a number of the 4-H Club camps attended by the extension entomologist. The movie has been edited and titled and has been shown to several groups of interested leaders and parents, as well as at 4-H Club annual parties held in counties. The movie is intended to increase interest in entomology projects and activities among 4-H Club members.

CHIGGERS, OR HARVEST MITES

Oklahoma. Reports from 4-H Club camps, and from sportsmen who have been camping out in the State during May, June, and July indicate that chiggers were unusually numerous. Some reports state chiggers not only were more numerous but seemed to be larger and caused "plenty of grief." At each of the club camps attended, the use of dusting sulfur for the control of chiggers was demonstrated. Boys who dusted themselves thoroughly with sulfur before going out on hikes reported that they had scarcely a chigger on them. Drug stores and seed stores are now stocking dusting sulfur, and report the demand for this chigger control is increasing.

ANTS

Oklahoma. Requests for assistance in ant control have increased severalfold during the past year. Most of this work was done through the home demonstration clubs. In McClain County, the Goldsby Home Demonstration Club undertook as one of its projects the eradication of red ants widely distributed over a schoolyard. A demonstration was given, using carbon bisulphide. Most large dens of ants were treated at this demonstration; the remainder were left to be treated by the members of the clubs, who were asked to be on the lookout for any ant dens that reappeared.

Demonstrations on red-ant control were also given in Payne, Pawnee, and Garfield Counties. The red-ant control work started at Frederick in 1938 by the city Chamber of Commerce and the National Youth Administration continues to show its effect - many city blocks are now free of this pest. The project will be revived in 1941, in an attempt to rid the town of red ants.

CATTLE GRUBS AND STARLINGS

Kansas. For several years, John Dart has been using the squeezing method in eradicating cattle grubs, and has found it to be very profitable. This time he tried the derris wash. He prepared the materials according to directions, and applied the wash. The results were satisfactory; the grubs were dead, and many of them were protruding from the backs of the calves. Then came a snow and with it a flock of hungry starlings. The starlings attacked the cattle, apparently attracted by the protruding grubs. The attack was so vigorous that the cattle stampeded and went wild. They ran through fences, feed bunks, and every way possible. Hundreds of the birds were shot, by hunters, but that did not drive other birds away; they flew over to a straw-pile nearby and waited for the hunters to move away.

HORN-FLY CONTROL

Oklahoma. The Bureau of Entomology and Plant Quarantine, Dallas, Tex., agreed to place a cattle horn-fly trap in Jefferson County for demonstration and experimental use during the summer of 1940. On the R. V. Howard ranch south-east of Waurika, the watering place in a pasture was fenced and the flytrap placed in the gateway of this fence, forcing the animals to pass through the trap to reach the water and salt. About June 1 the trap was put into complete operation, then examined at monthly intervals by Mr. Bruce or his representative from the Dallas laboratories.

This trap was examined, first, on June 25, when 3 gallons of horn flies were found in it. (About 100,000 flies measure a gallon). On July 19, the trap was reexamined and about 3 gallons of flies were removed. The horn-fly population on adjoining pastures was estimated at 2,000 or more per head of cattle; on the trap pasture, the average was only 250. Around 10 gallons of flies were trapped during the season from the 50 head of cattle in the trap pasture.

It has been estimated by Mr. Bruce of the Dallas laboratory that one horn fly will take from $2\frac{1}{2}$ to over 4 milligrams of blood from an animal each day. On this basis the total amount taken by horn flies from 50 head of cattle in the trap pasture was about 1.7 gallons during the season; on the adjoining pastures, from every 50 cattle, about 13.1 gallons were taken.

Therefore, Mr. Howard has prevented the loss of 11.4 gallons of blood from his cattle in the trap pasture, and, consequently, several pounds of their flesh.

CUTWORMS DID NOT "MAKE THE GRADE"

Kansas. In the very early spring the old black crows were pulling at the sod and turning over cow chips in an effort to find cutworms. The crows are usually the key to the presence of the cutworm. On many occasions I visited grass fields and wheatfields that had been pastured, to see what the crows were finding, and I, too, was disappointed. There were very few cutworms in the early spring and not many showed up.

In the western edge of the State, the Pale Western cutworm caused much damage and more concern. In checking fields that were badly infested, the infested fields usually had an abundance of grasses - the regular foxtail and crab grasses common in fields in late August and into September. These grasses were often abundant or plentiful in so-called summer-fallow fields. Summer fallow had been planted early to wheat, and the grasses had sprouted after the wheat seeding. Such fields were generally badly infested, and there was a direct connection between the grassy fields, whether summer fallow or not, we believed, and the fields that attracted a species of moth. These moths lay their eggs in August and September and some pass through winter as moths; eggs, therefore, may be found very late and even in the spring.

We found many fields clear of worms. That situation requiring some thought and study, a careful inquiry in the fields revealed that fields clean of grass, whether or not summer fallowed, were free of worms, provided there

was no early wheat. There seemed to be a direct relation of grasses to early seeding of the wheat. We studied the situation further and found that wheat planted near or on the so-called safe-seeding date had none of the grasses, and no worms.

THREE-CORNERED ALFALFA HOPPER

Arizona. Throughout Arizona to some extent, and especially in the Verde Valley in Yavapai County, where alfalfa is grown continuously throughout the summer months, there is a tremendous loss to hay crops late in the season, caused by the three-cornered alfalfa hopper. The damage is due to girdling of the stems, caused principally by the feeding punctures of the immature insects. These punctures are made in a continuous band around the stem, usually just above the ground level and completely girdling the stem. This girdling interferes with the movement of water and nutritive materials through the stem, producing a distinctive yellowish bronze color to the leaves. The stems become woody and the leaves soon fall, greatly reducing the value of the plants for hay. From observations it seems probable that, by following a regular harvest schedule of approximately 35 days, and then delaying irrigation for a few days after harvest, especially for August and September crops, the damage can be largely prevented. Consequently, a demonstration was planned to determine the value of these changes in cultural practices.

MELON APHID

Oklahoma. Melon-aphid control in Muskogee County was a very interesting phase of work, which was conducted during the year. Cantaloup and watermelon growers throughout this area expressed considerable concern about the melon aphid and, owing to the seriousness of the attacks of this pest, many growers were not planting cantaloups or watermelons.

Recent experimental work conducted by the Department of Entomology of the Oklahoma A. and M. College indicated that nicotine dust, 4 percent, was effective in killing and controlling this aphid; therefore, it was planned to hold a series of demonstrations in Muskogee County to pass this information on to the melon growers. Four demonstrations were planned in the various melon growing communities. At the time the demonstrations were given, melon aphids were showing up in large numbers and had killed many cantaloup plants, so the truck growers were especially interested in this work.

Many farmers adopted the practice of dusting and were able to save their crops. Some farmers had been attempting to dust and were somewhat discouraged because of poor results, but after we visited their farms and showed them proper methods of mixing and applying the dust, they were able to protect their crops satisfactorily. One farmer had been mixing his nicotine dust in an open box and pouring the nicotine sulphate into the lime until it turned a chocolate brown color; then, on attempting to dust, this material would clog the dust gun. He would then air the nicotine dust so that it would dry and, as a result, he was losing all the effectiveness of the nicotine sulphate. This one example is just one of a few of the errors which we found in doing the work in Muskogee County.

EVALUATING ORCHARD SPRAYING

Pennsylvania. In making the survey, 365 orchards were examined in 55 counties. These orchards yielded 3,084,215 bushels of apples or approximately one-third of the estimated State production, which was about 9,240,000 bushels. In 120 orchards where all the recommended sprays were properly applied, total insect damage amounted to 2.8 percent. But in 227 orchards where either the complete program was neglected, or the application or timing was poor, the insect injuries averaged 24.6 percent. These may be compared with 18 unsprayed orchards where the insect damage was 66.5 percent.

Monetary losses in the 120 well-sprayed orchards due to insect attacks averaged \$15,908. In the 227 orchards where spraying information suggestions were not followed completely, the insect losses averaged \$240,933.

FENCE POST PRESERVATION

South Carolina. Considerable interest and activity have advanced the project of fence post preservation during the year. Results secured to date have been sufficiently encouraging, not only to result in placing a few additional demonstrations, but also in encouraging some farmers to treat a considerable number of posts. These farmers have been given all available information on the subject, and are fully aware that much remains unknown concerning the subject of fence post preservation with the water soluble preservatives. Some are now becoming intensely interested in the trough method (suggested by E. C. Turner, soil conservation specialist), which has been increasing by leaps and bounds. Several demonstrations were held in cooperation with M. H. Bruner, extension forester, to show a use which might be made of trees thinned from pine tracts.

Some corrosion has been noted where bluestone was used. Where zinc chloride was used and a post was seasoned, corrosion to date has been extremely negligible. Except in special places where corrosion is not a factor, further use of bluestone should await findings of the South Carolina Experiment Station.

Below will be found some excerpts from county agents' reports relative to fence-post preservation:

Berkeley: "The splendid results by E. B. Marion from treating fence posts in 1938 inspired J. C. Everett to treat posts this year. This treatment has solved a farmer's problem of getting a cheap fence post."

Hampton: "One good demonstration with the following observation: Treated posts, sound; untreated posts cut at the same time, rotten."

Sumter: "Where pine poles were treated in June 1938 with zinc chloride, the poles are still perfectly solid and the untreated ones have rotted down. We saw this demonstration on the farm tour and it was most impressive."

York: "The treated posts were of pine, sweet gum, and poplar. This is their fourth season and they are still sound and show no evidence of decay."

Similar testimonials were cited from 18 counties.

SHADE TREE INSECT WORK

North Dakota. Demonstrations on the control of insect pests of trees were held in three counties of the State, in cooperation with the extension forester. Special attention was given to tree borers, especially the carpenter worm, cankerworm, and an outbreak of cecropia moth larvae in Burleigh County. Very enthusiastic reactions, especially in the cankerworm control work, were received in Ward County, as is indicated by a letter from Raymond C. Dobson of the Minot City Park Board; addressed to F. Gray Butcher, extension entomologist and plant pathologist, N. Dak. Agricultural College, Fargo, N. Dak.:

"I am pleased to tell you that the job of tanglefoot banding of elm trees done at the Minot Country Club early last spring proved very effective in protecting the trees.

"I shudder to think what the trees would have looked like if the bands had not been put on them. Not all of the conspicuous trees were banded, and those which were not were completely stripped of their foliage by cankerworms. The bands trapped literally millions of males and females, and it was interesting to me to note that though the males have wings, they seem to prefer to crawl up the trunks and were trapped along with their girl-friends.

"We started this work about the first of March--and this wasn't early enough, as it could be seen that a few of the females had already gone heavenward and laid their eggs. I have told the greenkeeper to put on the tanglefoot beginning not later than February 1, next spring, and we are going to band every elm on the place and I believe that this job probably will annihilate them for a few years at least.

"The infestation was so heavy that when the bands filled up there were indications that the bugs would be making a bridge out of their imprisoned fellows, so we stirred up the bands to catch latecomers.

"I am convinced that we can control them with the simple device of wide enough bands, placed on the trees before the first one shows up, and that there is no need for any fancy trap to take care of them.

"Thanks a lot for the interest you have shown in this matter, and I hope that whenever you come to Minot you will drop in and see me.

"With kindest personal regards."

TIMELY TOPICS

TERMITES AND NATIONAL DEFENSE

Representatives of the Division of Forest Insect Investigations at the New Haven, Conn., Berkeley, Calif., New Orleans, La., Asheville, N. C., and Beltsville, Md., laboratories, Bureau of Entomology and Plant Quarantine, have visited defense housing projects of the U. S. Housing Authority and the Public Buildings Administration, and U. S. Army cantonments and naval and air bases to confer with officials relative to construction and maintenance of buildings to prevent termite attack.

In some instances an opportunity has been afforded to discuss construction details while the projects were in the blueprint stage and to make recommendations for proper termiteproof construction. In other cases, notably Army cantonments, where construction has been completed, recommendations have been made concerning the maintenance of the buildings to minimize termite attacks. It is believed that these contacts have already resulted in considerable savings in initial construction expense and have also reduced maintenance costs appreciably.

TO COMBAT STORED-GRAIN INSECT PESTS

Editorial in Northwestern Miller (October 8, 1941): Continuing and recently substantially increased losses by millers and their customers from insect infestation of mill products and the . . . Federal Government . . . campaign against infested food products of every kind amply justify action of the Millers National Federation in setting up a special department in its organization to aid its members and the bread industries as a whole in combating an evil that is age-old. . . . The federation was both wise in selecting and fortunate in being able to secure George B. Wagner for the new assignment. Associated for many years with R. T. Cotton (in the Bureau of Entomology and Plant Quarantine) . . . he is undoubtedly better equipped for the task than any other man. His standing with officials of government is such as to insure complete cooperation with them, and his many years' contact with millers, together with his enviable personal characteristics, have won him high place in their confidence and respect.

SAYS WHITE GRUBS WILL THREATEN CROPS IN 1942

Harold Gunderson, Iowa extension entomologist, has warned Iowa farmers that 1942 will be a bad white-grub year. He said the grubs would constitute a particularly serious menace to crops planted on spring-plowed grassland. Crops planted on fall-plowed pasture, sweet clover, and soybeans also will be in danger, but to a lesser extent. Because of this heavy white-grub infestation, Gunderson said it will be wise not to plant corn on pasture land next spring. Damage also may be expected next year to corn planted on corn ground, Gunderson said, since white-grub surveys conducted last summer showed heavy grub populations in some cornfields.--Better Iowa (October 13, 1941)

SAWFLY DESTROYS 50,000,000 BUSHEL OF CANADIAN WHEAT

Winnipeg report in Northwestern Miller (October 29, 1941): Western Canada's 1941 wheat outturn was cut by 50,000,000 bushels as the result of wheat-stem sawfly infestation, according to Dominion Government entomologists' estimates. The loss occurred on more than 15,000,000 acres. . . Considerable progress in breeding sawfly-resistant types of wheat was reported recently by the cereal division of the Dominion Experimental Farms Service, Ottawa. . . .

THE EFFECT OF FERTILIZER ON COTTON-LEAF APHIDS

Observations during recent years have indicated that leaf aphids were more abundant on cotton following cover crops and where nitrogenous fertilizers were used than on unfertilized land. In a test conducted this season by R. L. McGarr at the State College, Miss., laboratory, Bureau of Entomology and Plant Quarantine, the average seasonal aphid populations on dusted and undusted cotton, fertilized with different percentages of nitrogen were as follows: No fertilizer and no calcium arsenate, 0.91 aphid per square inch of leaf surface; no fertilizer and calcium arsenate dust, 6.05 aphids; 0:8:4 fertilizer and calcium arsenate dust, 6.75 aphids; 2:8:4 fertilizer and calcium arsenate dust, 8.34 aphids; 4:8:4 fertilizer and calcium arsenate dust, 8.88 aphids; 6:10:4 fertilizer and calcium arsenate dust, 9.76 aphids; 6:10:4 fertilizer and no calcium arsenate, 1.07 aphids. It appears from these results that the use of fertilizer caused no appreciable increase in the number of aphids when calcium arsenate was not used; but that aphids increased roughly in proportion to the amount of nitrogen in the fertilizer when calcium arsenate dust was applied to the plots.

CHEMURGIC RAW MATERIALS -- HIDES AND SKINS

Hides and skins are among the highest-price-per pound raw materials that agriculture produces. The tanner often pays as much or more per pound for the best flayed and cured hides and skins of cattle and calves than the butcher pays for the dressed carcasses of these animals. Yet, because they are byproducts of another industry and frequently are marketed by indiscriminating methods, hides and skins are all too often treated with but little regard for what should be done to realize their maximum value.

It is generally considered that for cattle an average of about 7 percent of the live weight and about 11 percent of the value of the live animal is in the hide. In the case of calves, the skin may equal as much as 20 percent of the value on the hoof.

The importance of hides and skins is shown by the fact that about 125 million are tanned annually, worth around 200 million dollars. The leather produced has a normal factory valuation of around 450 million dollars. It is converted into shoes, belting, harness, and other goods for which consumers spend yearly close to 2 billion dollars. Domestic production is about 40 million hides and skins annually, worth well over 100 million dollars. It is necessary to draw upon foreign countries for the balance.

There is a possibility of substantially enlarging the income to agriculture by improving the quality of hides and skins. In this country animals

are raised not primarily for their hides and skins, but for purposes such as meat, milk, and wool. Improvement in the inherent properties of domestic hides and skins, as through breeding and special feeding, would place these materials in a stronger competitive position. Estimates of the annual monetary loss due to spoilage and waste of hides and skins from faulty skinning, poor cure, and improper handling have ranged from 10 to 20 million dollars. This loss is additional to that incurred from insects or parasites infesting the living animal and from diseases.

For the benefit of agriculture and the leather industry, therefore, it is evident that considerably more attention needs to be devoted to the production of high-quality hides and skins and to better methods of marketing.--News Bulletin, National Farm Chemurgic Council (August 25, 1941).

PYRETHRUM KILLS SILVERFISH

Pyrethrum spray kills silverfish, insect pests of books, papers, and linens, Arnold Mallis, University of California (L.A.), recently reported. Sodium fluoride and sodium fluosilicate have been used in the past to control silverfish but are only partially effective. Studying the diet preferences of silverfish, Mallis found that animal fibers such as silk and wool are not as popular with the pest as vegetable fibers, linen, rayon, cotton, and lisle. Silverfish are very fond of cellophane, soft tissue and onion-skin paper, preferring these to newsprint and cardboard, he reports.--Science Service.

SULFUR-SALT NOT FLY-REPELLENT

The Kansas Agricultural Experiment Station dispels the tradition that cattle fed salt, to which sulfur is added, will not be annoyed by flies. Cattle with access to salt to which sulfur had been added, and sold as fly repellent, gained slightly less and were annoyed just as much as cows eating ordinary salt.--Better Farms (Aug. 15, 1941).

TEST FOR STOCK SPRAYS

To test in the laboratory the effectiveness of livestock sprays under practical farm conditions, the Bureau of Entomology and Plant Quarantine has developed a spraying method that gives the flies as much chance to survive as they would get on the average dairy farm. The flies are sprayed with a definite quantity of the insecticide being tested, and are then put in a cabinet through which passes a current of spray-free air, as would be the condition on the barn floor. By working with cages containing definite numbers of flies, the bureau makes records of the numbers affected, duration of the effects, rates of recovery. Similar methods might be used to get further information on the effectiveness of household sprays as well.--American Butter Review (July).

DRY ICE ATTRACTS MOSQUITOES

Entomologists of the New Jersey Experiment Station report that dry ice attracts mosquitoes, says T. D. Mulhern, in Science Digest for September. In one test in Jersey a standard trap caught 208 mosquitoes, and a similar

trap with dry ice caught 3,500. The trap used by the station in mosquito-control studies is a metal cylinder, with a 25-watt electric light and an 8-inch fan inside. The station men hope to develop an effective small trap which can also be used as a porch or lawn light.

CREOSOTE SPRAY FOR SANDBLY CONTROL

In preliminary tests made by J. B. Hull and S. E. Shields, of the St. Lucie, Fla., laboratory, Bureau of Entomology and Plant Quarantine, 200 feet of ditch was sprayed with creosote oil at the rate of 1 gallon of creosote to 100 feet of ditch. Only 1 larva was isolated from three 1-quart samples 18 days later. From an untreated ditch 150 feet away, almost 100 larvae were isolated from each sample.

BLUE BUGS MAY CARRY FOWL PARALYSIS

North American Veterinarian (October 1941): Brown and Cross, at the Texas College of Arts and Industries, have reported some experiments which suggest that "blue bugs" may play a role in the transmission of fowl paralysis. The experiments consisted of controlled exposure tests and inoculation of susceptible birds with a suspension of ground body contents of blue bugs. In the pen-exposure tests, 111 birds out of 120 developed paralysis. In the control pens, only one bird out of 126 came down with paralysis. Since the inauguration of measures designed to prevent the recurrence of blue bugs at the college, there has been a marked diminution in the number of cases of fowl paralysis in the college flock.

TOXICITY OF ROTENONE APPARENTLY INFLUENCED BY DILUENT USED

L. W. Brannon, of the Norfolk, Va., laboratory, Bureau of Entomology and Plant Quarantine, reports the following results of an experiment conducted on snap beans for the control of the Mexican bean beetle (Epilachna varivestis (Muls.)), in which nine diluents for derris were compared (each diluted to contain 0.50 percent of rotenone): "Although 1.25 inches of rain occurred 6 hours after the first insecticidal treatment (June 14) and 0.26 inch occurred 29 hours after the second treatment (June 26), fair control of the Mexican bean beetle was obtained with most of the rotenone-bearing dust mixtures used in the experiment. Nine diluents were tested with derris (each dust mixture diluted to contain 0.50 percent of rotenone) to determine the most effective insecticidal carrier for this material for control of the Mexican bean beetle. Preliminary results of the experiment indicate the following relative rating of the diluents: (1) Talc, (2) sulphur, (3) pyrophyllite, (4) redwood-bark flour, (5) walnut-shell flour, (6) diatomaceous earth, (7) infusorial earth, (8) clay, and (9) tobacco dust. Derris-clay and derris-tobacco dust gave practically no protection against the insect. Control was not so satisfactory as usual with any of the materials, owing to the above-mentioned rainfall, which occurred shortly after each insecticidal treatment. These results appear to confirm results of tests conducted in 1940 with commercial rotenone-bearing dust mixtures in which variations in the degree of control were attributed to changes in the toxicity of the rotenone as affected by the diluent used. In view of the recorded precipitation which occurred 6 hours after the first treatment and 29 hours after the second treatment, the relative adhesive qualities of the various diluents may be a prime factor in causing these variations in control."

HARLEQUIN BUG CONTROLLED BY ROTENONE

A dust that contains .75 percent rotenone has been found to be very effective in the control of the Harlequin bug in Alabama. One thorough application made early in the morning of a warm day will kill most of the adults and nymphs of this common garden pest.--By W. A. Ruffin, extension entomologist, Auburn, Ala., (Nov. 19, 1941).

NEW RED SPIDER SPRAY PROMISING

Florists Exchange (Nov. 8, 1941): SCIENCE reports that P. A. Ark and C. M. Tompkins of the University of California, in the course of investigations not related to red spider control, observed that when a 2 percent phthalic glyceryl alkyd resin in water was applied to plants heavily infested with red spiders, the latter quickly disappeared. Examination showed large numbers of dead spiders in all stages of development, while masses of eggs turned yellow and shriveled after 5 days. No injury was observed on plants tested experimentally under glass and in the field. The experimenters state that, as the work was done in commercial greenhouses and in the field, it seems probable this chemical may become important as an insecticide.

DISEASE ATTACKS CODLING MOTH

Vera K. Charles, of the Bureau of Plant Industry, writes in Mycologia (July-August, 1941) on a fungous disease of codling moth larvae. The disease has been reported from Virginia, Indiana, and Delaware, she says, where it has reduced the numbers of overwintering codling moths on apple trees.

ROYAL JELLY RICH SOURCE OF PANTOTHENIC ACID

Two scientists of the A. and M. College, Texas, have discovered that royal jelly, found in every beehive, and supplying supernourishment for the production of queen bees, is the richest known source of pantothenic acid, being $2\frac{1}{2}$ to 6 times as rich in this essential vitamin as either yeast or liver, hitherto considered the richest source of this rare acid.

In a study of the physiological factors responsible for development of one female larva into a worker and an identical one into a queen, Dr. P. B. Pearson of the Department of Animal Husbandry, A. and M. College, and C. J. Burgin of the Division of Entomology, Texas Agricultural Experiment Station, in an assay of royal jelly for various vitamins, found that pantothenic acid is the only one in which that substance is unusually rich. They concluded that the presence of this vitamin in unusual amounts may be a factor responsible for the development into queens of the female larvae which continue to receive royal jelly.--756 Progress Report. Tex. Agr. Expt. Sta., A. and M. College of Texas. College Station, Tex. (Oct. 2, 1941)

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